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ABSTRACT

The findings of studies on the status of medical education in the South and the deliberations of a regional conference "Alternatives in Medical Education in the South" held in Atlanta, December 15-16, 1980 are summarized in this publication. The following issues are addressed: (1) the national picture of the future supply of physicians: (2) physical supply in the south: (3) distribution of physicians: (4) increasing the number of black physicians in the south: (5) strategies for distributing physicians: and (6) issues in financing medical education. As a result of the near doubling of enrollments in the medical schools of the South and the reversal of the traditional out-migration of young physicians, the region is faced with the certainty of a surplus of physicians by 1990 and beyond, especially in the surgical specialities. Projections show that despite the overall surplus, problems will still remain in the distribution of physicians to rural areas, inner city areas, primary care specialties, and public agencies. Shortages of black physicians in proportion to the part of the population that is black will also continue. (JN)

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Alternatives in Medical Education in the South:

Supply, Distribution, and Cost

Harold L. McPheeters, M.D., Editor

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SREB 2

Southern Regional Education Board

FOREWORD

Approximately eight percent of the entire state expenditures for higher education in the South is spent on medical education alone, and these expenditures are increasing faster than those for the other parts of the postsecondary education budget. Since 1965, the South has created 16 new medical schools, and enrollments in the existing schools have increased greatly. Recently, the federal government declared that the nation is headed for a surplus of physicians, and announced its intention to end capitation support for medical schools.

Aware of the concerns of its leaders about the costs of medical education, the Southern Regional Education Board (SREB) has examined the picture of the future supply of physicians and the alternatives available to the states to deal with the problems of an impending surplus of physicians and the rising costs of medical education. This publication summarizes the findings of studies of the situation in the South and the deliberations of a regional conference on "Alternatives in Medical Education in the South" held in Atlanta December 15-16, 1980. It is hoped this summary will assist decision makers in both state government and higher education to deal with these issues.

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THE NATIONAL PICTURE OF THE FUTURE SUPPLY OF PHYSICIANS

Medical education in the United States began as an apprenticeship program. However, at about the same time the nation declared its independence, proprietary medical schools were established, and later flourished in most of the major cities, often in shameless competition with each other.

The quality of the schools and intense competition had become so bad by the early 1900s that a special commission, headed by Abraham Flexner, was convened to make recommendations for future directions of medical education in the United States. The Flexner Report in 1910 recommended the closing of many of the small proprietary medical colleges and the establishment of the science-based medical curriculum that became the standard for medical education as it exists today. Over the next two decades, several of the proprietary medical schools closed and/or consolidated with nearby schools--often those in universities which could provide the scientific instruction as well as the clinical resources necessary for a well-rounded education.

This pattern met the nation's overall need for physicians until after World War II when advances in the techniques of medical care led to increasing specialization in the medical school curriculum. Soon, the pattern for nearly all medical school graduates was to enter specialty training after their internships and then to set up specialty practices in the urban centers that could best support them.

With considerable growth in the American economy, more people could purchase the medical care they needed. This increased demand, together with the loss through death and retirement of general practitioners in rural areas, led to demands that there be more medical schools and more medical graduates to meet unmet needs for family physicians in underserved areas.

States responded to these demands by establishing 40 new medical schools between 1960 and 1980, and by greatly increasing the enrollments in existing schools. The federal government responded by providing funds for the construction of new medical school facilities. Then, in 1963, Congress began a program of capitation support for medical schools on the condition that they increase their enrollments. In 1975, the Veterans Administration also began a program to assist in the initial support of a limited number of new, state medical schools that would be affiliated with Veterans Administration hospitals. Four of these new medical schools are in the South.

This program of federal-state support for the development of new medical schools and the expansion of the enrollments of existing schools has been remarkably successful. Enrollments are now 75 percent greater than in 1970. In recent years, leaders in the federal government and in the medical profession have pointed out that this unprecedented increase in the numbers of medical students is likely to lead to surpluses of physicians in the future. They find that such a surplus is inevitable: the course of training to become a practicing physician is 8 to 10 years, and the 100,000 students already in the pipeline in 1980 will produce an oversupply by 1990. Unchecked, an even greater surplus of physicians is likely by the year 2000.

THE GRADUATE MEDICAL EDUCATION NATIONAL ADVISORY COMMITTEE REPORT

In September 1980, the final report was released from the Graduate Medical Education National Advisory Committee (GMENAC), a national committee convened by the Health Resources Administration of the U.S. Department of Health and Human Services, to study and report on the national trends and needs in medical education. The GMENAC was made up of 23 members; 19 were from the private sector of medicine and 3 from the major medical services of the federal government. Panels of experts made projections for the numbers of physicians who would be needed in the various specialties by 1990 and 2000. There were also panels that looked at such topics as non-physician providers, geographic distribution, medical education and financing. The GMENAC report and its method for projecting the future need for physicians in the specialties has stimulated considerable discussion at the national level.

The methodology was basically a needs-based approach to estimating the medical care requirements of the population of the United States by 1990 and 2000. That is, panels of experts in the various medical specialties estimated how many specialists would be needed to provide medical care for all the nation's population in all the specialty areas. It projected the physician supply for those years based on the current supply, anticipated numbers of new medical graduates of United States and foreign medical schools, and the expected attrition. The supply projections predict an increase of physicians from 374,800 in 1978 to 536,000 in 1990. It is estimated that by 2000, there will be 200,000 new physicians in the primary care specialties (general practice, family practice, obstetrics, pediatrics, and general medicine). These figures,

at least for 1990, are quite firm because the physicians for 1990 are already in the pipeline as medical students and residents in training.

Overall, the GMENAC projected that there will be 70,000 more physicians than the panel of experts recommended would be needed by 1990, and 150,000 more physicians than will be needed by 2000. The GMENAC also projected the needs and anticipated supply for individual specialties. They found four specialties will be short of the need by 1990:

SPECIALTIES	PERCENTAGE OF SUPPLY AVAILABLE TO MEET NEED BY 1990
Child psychiatry	45 percent
Adult psychiatry	80 percent
Emergency medicine	70 percent
Preventive medicine	75 percent

For a number of specialties, the supply will be nearly in balance with the need.

SPECIALTIES	PERCENTAGE OF SUPPLY AVAILABLE TO MEET NEED BY 1990
Hematology	90 percent
Dermatology	105 percent
Gastro-enterology	105 percent
Osteopathic medicine	105 percent
Family medicine	105 percent
Internal medicine	105 percent
Otolaryngology	115 percent

The surgical specialties, radiology, pathology, and other specialties will show an oversupply of 150 to 200 percent by 1990.

Controversial Issues

There are many controversial aspects of the GMENAC report. These fall into several categories:

- methodology
- economic theories related to the surplus
- minority physicians
- delegation of tasks to physician extenders
- U.S. citizens studying medicine abroad
- need for physicians in academia and in the public sector
- effects of the reimbursement system for physicians' services
- steps to government regulation

The two that are especially revelant to the South are the economic theories of a surplus and the problem of minority physicians.

There are those who argue that a surplus of physicians will lead to better distribution and lower fees. However, presently, wide variations exist in the rate of use physicians in different geographic areas, depending on the value systems and the economic well-being of the population. Overall, it appears that utilization rates of physicians are determined by the numbers of physicians available to provide services. At the rate of the projected increases in numbers of physicians by 1990, it can be expected that health care and training costs will increase by $12 billion a year nationally, without adjusting for inflation. There is evidence that much of the technology (e.g., medical and surgical procedures) which is applied to patients in areas with an oversupply of physicians is not needed.

Nationally, only 3 percent of all physicians are black, compared to 11 percent of the total U.S. population. The percentage of black physicians will increase to 5 percent as new graduates enter practice. However, it is no secret that the delivery system for medical services is race conscious; 80 percent of a black physician's patients are black. A large percentage of the black

popula ion receives medical care in hospital emergency rooms, while most of the remainder of the black population goes to black physicians or is unserved.

Nationwide, the number of black medical graduates has stabilized at about 850 per year, with 500 of this number from the predominantly black schools and 350 from all other schools. Numbers of black faculty are insufficient in nearly all medical schools.

Recommendations

The GMENAC made these recommendations:

1. Existing medical schools should reduce enrollments up to 17 percent.
2. No new medical schools should be undertaken.
3. The enrollment of black medical students should be increased.
4. States should examine the use of physician extenders (Physician assistants and nurse practitioners) and not increase enrollments until the studies are completed.
5. Medical schools should emphasize prevention and changes in life-styles to reduce the amount of chronic illness.
6. Medical schools should stress public service.
7. States should keep monitoring the supply of physicians.

The GMENAC recommended that its work be continued, but the Secretary of Health and Human Services, Patricia Roberts Harris, decided not to renew its charter. However, the federal government is using the committee's finding that the nation is headed for a surplus of physicians as a rationale for ending federal support for medical education.

PHYSICIAN SUPPLY IN THE SOUTH*

Prior to 1970, the South lagged far behind the rest of the nation in the total supply of physicians. In 1970, the South had 100 physicians per 100,000 population, compared to the rest of the United States which had 134 physicians per 100,000 population. Only Maryland, with 146 per 100,000 was over the national average.

However, growth in the number of physicians in the South during the last decade has been phenomenal. Between 1970 and 1978, the supply of physicians increased 54 percent in the South, compared to 30 percent in the rest of the nation. While the general population of the South also increased during this time, the rate of increase of physicians outstripped the 17 percent growth in the population. After adjusting for increases in the general population, the rate of increases of numbers of physicians per 100,000 population grew by 16 to 36 percent in the various Southern states; by 1978, the region had 128 physicians per 100,000 population. All states increased at a rate greater than the average rate of the rest of the nation (see Table 1).

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* Studies of the current and future supply of physicians for the South and its individual states were made in 1980 by James Begun and Donald Brown at the University of North Carolina in Chapel Hill.

TABLE 1

Non-Federal Patient Care M.D.s Per 100,000 Population
1970 and 1978

	1970	1978	Percent Increase 1970-1978
Alabama	78	103	32.1%
Arkansas	80	99	23.9
Florida	115	156	34.8
Georgia	92	119	29.0
Kentucky	89	110	24.3
Louisiana	104	121	16.3
Maryland	146	187	28.2
Mississippi	74	90	21.4
North Carolina	91	122	32.8
South Carolina	80	108	35.8
Tennessee	102	129	26.0
Texas	102	127	24.4
Virginia	104	134	29.9
West Virginia	92	112	23.9
SREB Region	100	128	28.2
Other Regions	134	156	16.2
United States	124	148	18.7

The numbers are not adjusted for growth in the "not classified" category, which increased from 358 nationally in 1970 to 25,553 in 1978. "Other Regions" and "United States" exclude possessions. 1970 population in U.S. Census count of resident population, from Area Resource File. 1978 population is projected from mean 1970-1977 growth rates by county, weighting 1975-6 and 1976-7 changes 1.5.

Sources: J.N. Haug, G.A. Roback, and B.C. Martin, Distribution of Physicians in the United States, 1970. Chicago: American Medical Association, 1971.
L.E. Wunderman, Physician Distribution and Medical Licensure in the U.S., 1978. Chicago: American Medical Association, 1979.

The increases in physicians are the result of four factors:

1. The growth in the number of medical school graduates in the region. There was an 84 percent increase in medical graduates in the South compared to a 75 percent increase elsewhere in the nation (see Table 2). The South has created 12 new medical schools since 1965, thus doubling the enrollments in the existing schools.

2. The increase in the number of residents in specialty training--a 63 percent increase in the South compared to a 26 percent elsewhere. Formerly, graduates of Southern medical schools left the region to pursue specialty training; this is no longer true.

3. An increase in the location of foreign medical graduates in the South--87 percent compared to only 31 percent in the non-South.

4. In-migration of physicians from other parts of the United States. The Sunbelt is attracting young physicians, in contrast to the past when young medical graduates from the South left the region and seldom returned.

Projections of the supply of physicians for the states of the South, based on recent patterns of physician locations and on the current and planned enrollments in the region's medical schools, show that in less than

TABLE 2

Medical School Graduates, 1969-70 and 1975-79

	1970	1979	Percent Increase 1970-1979
Alabama	76	221	190.8%
Arkansas	87	126	44.8
Florida	140	383	173.6
Georgia	173	289	67.1
Kentucky	152	243	59.9
Louisiana	234	415	77.4
Maryland	222	291	31.1
Mississippi	75	146	94.7
North Carolina	196	338	72.4
South Carolina	81	164	102.5
Tennessee	279	373	33.7
Texas	377	814	115.9
Virginia	183	406	121.9
West Virginia	59	92	55.9
SREB Region	2,334	4,301	84.3
Other Regions	6,033	10,527	74.5
United States	8,367	14,828	77.2

Includes provisionally accredited and developing-operational schools. Excludes basic medical sciences schools. "Other Regions" and "United States" exclude Puerto Rico.

Sources: Journal of the American Medical Association, 214,8 (November 23, 1970); 243,9 (March 7, 1980).

20 years the region will nearly double the present number of physicians (see Table 3). Even with the population increases expected, the South will outstrip the rest of the nation in growth of physicians per 100,000 population.

There are several ways to project the number of physicians required: need, demand, utilization. However, a common figure is 150 physicians per 100,000 population (used by the World Health Organization and the national government of Canada). By this standard, the nation is already oversupplied and the South is moving swiftly to close the gap. Whatever target is used, the South will meet the need by 1990; by the year 2000, there will be a surplus of physicians in the region.

TABLE 3

Supply Projections for Physicians, 1990 and 2000*

	Base Total (1978)	1990 Projection	2000 Projection
Alabama	4,027	5,601	6,844
Arkansas	2,281	3,221	3,950
Florida	15,232	22,690	28,057
Georgia	6,537	10,539	13,564
Kentucky	4,156	5,976	7,349
Louisiana	5,223	7,707	9,657
Maryland	8,562	13,842	17,709
Mississippi	2,311	3,245	3,967
North Carolina	7,154	10,446	13,017
South Carolina	3,362	4,803	5,920
Tennessee	6,025	8,658	10,731
Texas	18,462	26,590	33,017
Virginia	7,453	10,674	13,185
West Virginia	2,327	2,758	3,037
SREB Region	93,075	137,140	170,660
Other Regions	265,170	369,880	449,345
United States	358,246	507,373	620,564

*Based on distribution of 1965-1969 graduates of U.S. Medical Schools.

Source: "Projections of Physician Supply and Demand in the South," James W. Begun, 1980.

DISTRIBUTION OF PHYSICIANS

All of the above discussion relates only to the total supply of physicians. However, the issues of distribution are more important than the total supply. There are several aspects of distribution:

Geographic Distribution: In 1978, 50 to 70 percent of the populations of Alabama, Arkansas, Kentucky, Mississippi, North Carolina, and South Carolina lived in counties with fewer than 100 physicians per 100,000 population. The figures were 40 to 50 percent in Georgia, Louisiana, Tennessee, and West Virginia; and less than 40 percent in Florida, Maryland, Texas, and Virginia. There have been improvements; but the increases in the numbers of physicians in rural areas are only half those in urban areas (see Table 4). It appears that increasing the overall supply of physicians will result in some increases of physicians in rural areas, but creating an oversupply is an inefficient way to address the problem of geographic distribution to rural and inner city areas.

Specialty Distribution: The area of medical practice that is generally judged to be short of physicians in the South is primary care (family practice, general practice, pediatrics, obstetrics, and internal medicine). The South has experienced a 2.5 percent decline in the percentage of primary care specialists since 1970. The vast increases of physicians in the South have so far led to increasing specialization in the better supplied specialties, rather than to an increase in the primary care specialties. The current emphasis on family practice residency training may reverse this trend slightly in the future, but it has not done so yet.

TABLE 4

Unweighted Mean of Ratio of M.D.s Per 100,000 Population in Rural and Urban Counties 1970 and 1978

	Rural Counties		Urban Counties	
	1970 M.D.s/100,000	1978 M.D.s/100,000	1970 M.D.s/100,000	1978 M.D.s/100,000
Alabama	38	44	64	88
Arkansas	47	54	80	109
Florida	50	77	103	150
Georgia	45	51	53	80
Kentucky	47	52	86	109
Louisiana	43	52	88	111
Maryland	80	107	119	177
Mississippi	47	51	80	126
North Carolina	53	70	139	196
South Carolina	49	59	80	126
Tennessee	40	45	77	102
Texas	48	51	81	106
Virginia	62	78	76	101
West Virginia	64	74	78	114
SREB Region	49	57	84	116
Other Regions	58	n.a.	112	n.a.
United States	54	n.a.	100	n.a.

"M.D.s" refers to active, nonfederal M.D.s. 1970 population is U.S. Census count of resident population, Area Resource File. 1978 population is projected from mean 1970-1977 changes 1.5. n.a. = not available. Comparable numbers for 1977 were SREB Region, 56 and 112; Other Regions. 64 and 138; United States, 60 and 127.
"Rural" refers to AMA categories 1-4 as recorded in the Area Resource File from Physician Distribution and Medical Licensure in the U.S., 1977.

Sources: Area Resource File. (Described in Applied Management Sciences, Inc., The Area Resource File : A Manpower Planning and Research Tool. Report to the Division of Health Professions Analysis, HRA, U.S. Department of Health, Education and Welfare, Professions Analysis, No. 231-77-0105, August, 1979.)

Minority Distribution: Despite slight improvements, there is, and will continue to be, a shortage of minority physicians in the South. About 18.5 percent of the South's population is black, but only 2.4 percent of the South's physicians are black. With increased enrollments of blacks in Southern medical schools (currently 7.9 percent), this percentage can increase to only 6 percent--far short of the black percentage of population.

Curtailing the Surplus: A moderate surplus of physicians cannot be avoided, even if today the states and the medical schools were to take actions to cut back on admissions. However, the South may be able to curtail a great surplus of physicians in the future by cutting back on medical school enrollments. Even so, many of the problems of distribution will remain despite the overall supply, unless specific strategies are undertaken to address these problems.

Dr. Kenneth Penrod, from the Florida Community Hospital Education Council, a man who has given especially close scrutiny to the supply of physicians in that state, stresses the importance of up-to-date and complete data for making decisions about what actions to take. In Florida, he has obtained data from county medical societies, yellow pages of telephone directories, licenses of physicians with Florida addresses, medical school faculties and residents, and Veterans Administration staff to calculate the number of full-time-equivalent physicians. (He counted residents in training at .35 of a full-time physician.) He then studied the population projections for the state, making allowance for the large influx of tourist/visitors to Florida and the large geriatric population of the state.

Applying the GMENAC need ratios to Florida, he found that Florida will meet all of its needs for physicians by 1983. There will then be a surplus of physicians, especially in the surgical and some other specialties. Florida issues about 950 new licenses each year and has over 1,800 residency training slots. Despite the coming surplus, Florida, like the other states, will continue to have shortages of physicians in rural areas and shortages of black physicians.

Dr. James Glenn, a urologist and dean of the School of Medicine at Emory University, notes that the surplus of urologists has been predicted since 1966. The nation is training 350 urologists each year, but needs only 170. Other specialties are even more oversupplied. Such a surplus raises questions of the quality of care, because specialists must perform a certain number of procedures in order to retain their skills. There is a danger of falling below that minimum, although fees will remain high enough to assure that physicians maintain adequate incomes. Dr. Glenn predicts that many physicians will leave medicine and never practice, such as is the case in Europe. He feels that actions must be taken to reduce enrollments in both medical schools and in surgical residencies.

Senator Dewey White of Alabama, a practicing pediatrician in Birmingham, concurs. All projections agree that there will be too many physicians by 1990. We are already behind in making cutbacks in enrollments of medical students and in most residency training programs. Legislators are primarily concerned with two issues:

1. The high cost of medical education and health care.
2. Distribution of physicians--especially to rural areas.

The goal of creating an adequate supply of physicians has been reached; it is now time to face the new reality posed by these issues. Both legislators and medical school officials must look closely and ask questions, but it will be better if the medical schools voluntarily make the tough decisions.

INCREASING THE NUMBER OF BLACK PHYSICIANS IN THE SOUTH

Despite projections for the future supply of physicians that point to a coming surplus, both national and Southern studies stress the need to increase the number of black physicians, while at the same time reducing the overall number of physicians being trained. The 14 states of the South have 12 million black Americans, or 49 percent of the black population of the United States. The percent of the South's population that is black ranges from 36 percent in Mississippi to 2 percent in West Virginia, averaging about 18.5 percent. Yet black physicians make up only 2.4 percent of all the South's physicians. The result is a black population to black physician ratio that is 12 times the same ratio for whites. Yet the delivery system for medical care, except for emergency care and tertiary care, is decidedly race conscious. Very few white physicians locate in black neighborhoods in either urban or rural areas. At the same time, graduates of Meharry Medical College and Howard University College of Medicine do locate in these underserved areas in high percentages, according to follow-up studies of graduates of these two schools.

Nationally, 6.6 percent of entering medical students are black, a slight decline from the peak of 7.5 percent in 1974. One problem is that the pool of black students who apply for medical schools has not increased significantly since 1974. Black students make up 6.3 percent of the medical school enrollments in the South, but this relatively higher ratio is because of predominantly

black Meharry and Morehouse medical colleges (see Table 5). In 1980, there were 1,374 black applicants for medical schools from the 14 SREB states; of these, 27 percent (374) actually enrolled. The South produced 53 percent of the nation's black applicants to medical schools, but only 37 percent of those who actually matriculated.

According to Dr. Louis Sullivan, dean of Morehouse College School of Medicine, to achieve parity in blacks among physicians in the South, efforts are needed at several levels to increase the numbers of black physicians.

TABLE 5

Medical School Enrollment and Medical Degrees Awarded
Total Number and Percent Black
SREB States, 1978-79

	Medical Enrollment		Medical Degrees		Percent Population Black, 1976
	Number	Percent Black	Number	Percent Black	
United States	62,754	5.3	14,925	5.1	11.5
SREB States	18,169	6.3	4,186	5.5	18.5
South as a Percent of U.S.	29.0	-	28.0	-	-
Alabama	932	4.3	224	0.9	26.7
Arkansas	524	5.6	126	2.4	17.2
Florida	1,395	4.6	382	4.7	15.5
Georgia	1,210	3.0	289	2.8	27.2
Kentucky	1,006	2.1	243	2.9	8.8
Louisiana	1,707	3.7	326	4.0	28.6
Maryland	1,401	4.8	291	3.1	20.7
Mississippi	610	5.1	146	4.1	35.6
North Carolina	1,596	7.8	338	9.2	22.4
South Carolina	723	3.4	164	3.7	31.6
Tennessee[a]	1,638	28.7	390	24.1	16.4
Texas	3,554	2.6	772	2.2	11.6
Virginia	1,467	4.5	403	3.7	15.9
West Virginia	406	0.8	92	0.0	2.1

[a]Tennessee data include statistics for Meharry Medical College.

Sources: SREB Fact Book on Higher Education in the South, 1979 and 1980; preliminary data from HEGIS survey of degrees awarded, 1978-79.

1) Increase the size of the applicant pool through improved academic preparation, increased motivation and counseling, and financial assistance.

2) Improve the quality of pre-medical education in colleges with high percentages of minority students. There should also be liaisons between medical schools and these colleges, with relationships between students, faculty, and administrators. Combined baccalaureate-medical education programs should be tried.

3) Provide early counseling and motivation to minority students in the high schools.

4) Provide low interest loans and scholarships for these students, most of whom come from families whose total annual income is less than $10,000.

5) Assure commitment and concern by the deans and faculties of the medical schools to provide educational and social support for black students.

6) Increase the numbers of minority persons on the faculties of the medical schools.

7) Provide strong tutorial programs for all students who may have academic problems.

8) Provide support from state governments for the predominantly black medical schools which graduate over half of all the nation's black physicians.

The interstate contracts program, administered by the Southern Regional Education Board, has helped insure the continued efforts of Meharry Medical College and more recently Morehouse School of Medicine. Because these schools have demonstrated their success in identifying, recruiting, and educating black physicians who have come from disadvantaged backgrounds, legislators and higher education officials should consider expanding support for these programs at Meharry and Morehouse, as recommended by a special committee of SREB in June 1980. With strong support and encouragement, more young black citizens will be motivated to plan and prepare themselves for careers in medicine.

STRATEGIES FOR DISTRIBUTION OF PHYSICIANS

Perhaps the major reason states and the federal government made such strong efforts to increase the supply of physicians during the 1960s and 1970s was to train physicians to replace the general practitioners who were dying or retiring in small communities and in rural areas. The notion was that if the nation created enough new physicians, they would somehow distribute themselves to the areas where they were needed.

But now that the South has nearly doubled enrollments in the medical schools and is fast approaching an oversupply of physicians, it appears that the problems of distribution remain almost as severe as ever. The projections for the future indicate that the problems in distribution will remain even in the face of a considerable oversupply of physicians--unless the states and medical schools undertake specific strategies to address these problems.

The problems of distribution lie in three areas:

1. Geographic distribution to rural communities and to some inner city locations.

2. Subspecialty distribution to the primary care specialties of family practice, general practice, obstetrics, and general medicine and pediatrics, and to the specialties of adult and child psychiatry.

3. Public service distribution to work in city general hospitals, state mental hospitals, and public health and mental health centers and agencies.

Dr. Eugene Mayer, director of the North Carolina Area Health Education Center at the University of North Carolina, Chapel Hill points out the importance of collaboration between the medical schools and the state and local governments in solving these problems. Both the academic health sciences centers and state governments have important roles to play. The states of the South have already chosen several strategies to influence the distribution of physicians which may be directed to either the educational system or the delivery system. Some sophisticated combination of these will be more productive than either alone. Not only should there be a variety of strategies, but the strategies should be applied in some coordinated manner.

Among the strategies that may be directed to physicians in their training years are:

- preferential admissions for applicants who agree to serve in the areas of need
- loan forgiveness programs with steep penalties for failure to serve
- use of training sites in the need areas
- special funding for residency training in the "short supply" specialties
- use of Area Health Education Centers (AHECs) for training in primary care and rural practice.

The strategies directed to physicians in training are more effective than those directed to physicians already in practice, presumably because the physicians have been socialized in their developing years to a pattern of life and work which they tend to maintain. However, efforts directed

toward training will be most effective when they are combined with strategies to make the practice locations more attractive.

Among the strategies that may be considered to influence the distribution of physicians in practice are:

- increasing the income for physicians in need areas
- changing licensure provisions (e.g., to allow physician extenders to assist physicians in rural practices and in family practices)
- encouraging and assisting communities to recruit and support physicians with governmental funding and support services for physicians who practice in need areas, following the pattern of the National Health Service Corps.

Dr. Mayer recommends that these also be combined into sophisticated combinations. Single strategies, such as loan forgiveness programs, have often failed when they were provided to students who had no orientation or interest in practicing in the need areas.

North Carolina has had remarkable success in encouraging physicians to choose primary care specialties and small town practice through coordinating both training programs and funding to influence the distribution of physicians. The North Carolina Health Manpower Plan, 1980-1985, includes roles for academic health centers, medical schools, the 9 regional Area Health Education Centers (AHECs), community hospitals, and the state government. The basic programs which are included in this overall effort are:

- family medicine training programs with state appropriations
- training and use of physician extenders (physician assistants and nurse practitioners)

- loan forgiveness for physicians who practice in rural areas
- recruitment of special students (e.g., minority students)
- expansion of medical school enrollments
- an Office of Rural Health Services to aid communities in meeting their service needs through 27 health centers
- Area Health Education Programs in nine regions of the state.

These programs are well financed by the state, which has made a strong commitment to these efforts. The two programs which need a bit of explanation are the Office of Rural Health Services and the Area Health Education Centers.

Created by a state appropriation in 1973, the Office of Rural Health Services helps with community organization, the design of primary care systems, and the organization and management of local health centers. The office provides local health centers with both technical and financial assistance. The local health service programs have been organized in collaboration with the county and state medical societies and local boards of directors. A local contribution is required. Of the 27 health centers that have been assisted by the Office of Rural Health Services, 18 are now self sustaining.

A relatively inexpensive program, the Office of Rural Health Services costs $1.3 million per year. The Office has helped direct the recruitment and placement of 300 physicians and many other health professionals by contracting all primary care residents in North Carolina and putting them in touch with communities that are seeking physicians. The Office also provides

coordination of the physicians placed in North Carolina by the National Health Service Corps.

The Area Health Education Center Program in North Carolina is the nation's largest. (There are federally supported AHECs in Texas, West Virginia, Maryland, Virginia, North Carolina, and South Carolina, and non-federal AHECs in Kentucky, Arkansas, and Tennessee.) The AHEC program in North Carolina is statewide. While it is based in the medical schools, it has cooperative relationships with local medical societies and is generally viewed by people in the nine regions as a local program. It serves all kinds of health manpower-physicians, dentists, nurses, and allied health workers--and maintains libraries and classrooms in local community hospitals. Its objectives are:

1) to increase the number of persons in careers in primary care and community practice

2) to help practitioners keep up-to-date

3) to decrease professional isolation

4) to help communities recruit and retain health workers of all kinds

It also provides technical assistance to physicians, nurses, hospitals, and nursing homes. The AHEC program has administrative staff and full-time faculty persons who teach in the centers. This program receives $24 million per year from the state, but it has raised Nroth Carolina, the nation's fourth most rural state, to the top in the numbers of physicians per 100,000 population in rural counties.

Dr. Edward Brandt of the University of Texas system finds that when communities stress the quality of life for a physician, as well as financial support, they are much more likely to be successful in recruiting physicians. He also feels that strategies for attracting physicians to practice in need areas will be far more successful than mandated programs, which have never worked in the past.

Representative William Weinberg of Kentucky notes that while all states might not be able to do the many things which are impressive in North Carolina, they can set priorities and improve their situations. He stresses:

1) having a coordinating unit at the state level with a chief and some staff

2) developing grass roots networks to recruit and support physicians

3) providing a residency training in the need areas

4) using a multi-faceted approach, including combinations of strategies

Dr. Roger Bost, director of Arkansas' AHEC program, is a leader in helping a relatively poor rural state address these long-standing problems of distribution. The state of Arkansas assessed its problems (e.g., half of all its physicians were located in just two cities, while 65 of its 75 counties were classified as rural and losing general practitioners) in the mid-1960s and, as a result has taken several actions:

- expanded the medical school building and doubled enrollments in the medical schools

- developed a Department of Family and Community Medicine

- set up a rural medical practice loan program which is well funded

- established an AHEC at the University of Arkansas with six regional centers including family practice residency training programs

- established rural preceptorships for 75 percent of sophomore and junior medical students

- provided for 2-months clinical rotation of senior medical students to the AHECs, with lodging provided

- expanded the state Medicaid program

- established an Office of Research in Medical Practice focused on rural practice problems (supported by the Winrock Foundation)

- established an Office of Community Medical Relations, to work with communities in recruiting and supporting physicians

- began hosting community physician fairs where communities can set up booths and meet with medical students and residents who are considering practice locations.

The distribution is improving. Their studies show that 70 percent of the graduates of their family medicine program are locating in Arkansas communities of less than 12,000 population.

ISSUES IN FINANCING MEDICAL EDUCATION*

In 1977-78, funding for medical schools in the United States amounted to $4.3 billion, not including graduate medical education or capital expenditures. Revenues for medical schools rose 267 percent in the decade from 1968 to 1978, while medical student enrollments were increasing 75 percent and total students for whom medical schools have teaching responsibilities rose 80 percent.

During this period, the burden of financing medical schools shifted from the federal government to the states and to the revenues of the schools themselves (see Table 6). There has been a decline in the federal portion of support--from 55 percent in 1965-66 to 30 percent in 1977-78--largely because of diminishing federal assistance for biomedical research. Federal research funds now comprise less than one-fifth of total revenue for medical schools, compared to one-third 10 years ago. Federal research funds are restricted to research activities, however, and are not available for general operation of medical schools.

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* Eva C. Galambos, an economist on the staff of the Southern Regional Education Board, has made an analysis of the impact of the withdrawal of federal funds from two sources: 1) the capitation support for all medical schools and 2) the support the Veterans Administration has given to assist in the development of certain new state-supported medical schools to operate in conjunction with Veterans Administration hospitals.

TABLE 6

Sources of Revenue For United States Medical Schools
1960-61 - 1977-78

	1960-61	1965-66	1970-71	1975-76	1977-78
Federal Government‡	42%	55%	45%	37%	30%
State/Local Government‡	19	16	23	28	26
Non-Government*‡	27	18	18	15	14
Medical School/ University Activities**	13	12	14	19	29

*Includes endowment income, gifts, and revenue from miscellaneous sources.
**Includes revenue from medical service plans, tuition and fees, general university funds supporting the medical school, college services, and hospitals and clinics, but not indirect costs recovered from sponsored programs.
‡Includes indirect costs recovered.

Sources: Medical Education: Institutions, Characteristics and Programs, American Association of Medical Colleges, Washington, August 1979, p. 20; and "Medical Education in the U.S., 1978-1979," Journal of the American Medical Association, March 7, 1980, p.859.

The capitation funds, which are tied directly to enrollments and which medical schools have been free to use as they decide, have declined from $2,015 per student in 1973 to an estimated $685 per student in 1980. The total capitation support for medical schools in the Southern states in 1979 was $19 million, which represented approximately 5 percent of the states' contributions to medical school revenues. At the lower level of funding of 1980 the total of capitation support to the region was $12 million, or approximately 2.8 percent of what the states are currently providing to the schools (see Table 7).

The Veterans Administration program of support for the aid of the development of new state medical schools is one of declining support. All support is to end after the seventh year, which will be 1983. After 1983 this amount will have to be made up by the states. This falls on those states

which have the new medical schools (University of South Carolina, East Tennessee State University, Marshall University, and Texas A&M University).

There is another type of Veterans Administration support--special purpose grants to medical schools affiliated with VA hospitals. This program provided $5 million to the medical schools of the South in February 1979. The appropriations under this program have been reauthorized, but no funds have been appropriated. Columns 2 and 4 of Table 7 show the extent of the possible

TABLE 7

Estimated Losses to Medical Schools
If Capitation and Veterans Administration Support* Cease

	Capitation		Capitation and Veterans Administration	
	1980	Percent of 1978-79 State Support**	1980	Percent of State Support*
	(millions)		(millions)	
Alabama	$ .638	1.5%	$ 1.678	3.9%
Arkansas	.359	4.2	.359	4.2
Florida	.956	3.0	1.216	3.8
Georgia	.829	4.3	.829	4.3
Kentucky	.689	4.1	.689	4.1
Louisiana	1.169	4.6	1.364	5.4
Maryland	.960	6.5	.960	6.5
Mississippi	.418	3.1	.418	3.1
North Carolina	1.093	3.4	1.093	3.4
South Carolina	.495	2.0	3.195	12.7
Tennessee	1.122	4.8	3.722	16.0
Texas	2.435	1.7	7.635	5.4
Virginia	1.005	3.1	1.575	4.8
West Virginia	.278	1.6	1.834	10.4
Region	$12.446	2.8%	$26.567	6.0

*Veterans Administration support includes faculty support for developing schools in the last year of appropriated support, and special grants to affiliated medical schools, also in the last year of appropriated support. When current years are counted instead of the last year of support, the losses would be even larger.

**State Support refers to state appropriations and subsidies to public and private medical schools for general operations, 1978. State funds for capital improvements and for restricted programs are not included.

SOURCES: Col. 1--1978-79 Enrollment (Medical Education in the U.S. 1978-79, JAMA, March 3, 1980) x $685.
Col. 2--State support for operations, 1979, supplied by the Association of American Medical Colleges.
Col. 3--Veterans Administration appropriations and medical schools, plus Col. 1.

losses to the individual states. The total of all the federal funds under the capitation grants and the Veterans Administration support is $27 million or 6.0 percent of what the SREB states now provide the medical schools.

Meanwhile, the proportion of medical school revenues that comes from state appropriations has risen from 16 percent in 1965-66 to 26 percent in 1978. In 1979, the Southern states contributed $445 million to the general operations of public and private medical schools, not including graduate medical education, capital expenditures, or student loan funds. The figures for the individual states are shown in Table 8. The Southern states are already quite generous in their support of medical schools ($8.36 per $10,000 of personal income, compared to a $5.64 average for the United States). The medical schools are most likely to appeal to the state treasuries to make up the $27 million that will be lost from the termination of federal capitation grants and Veterans Administration support.

There are other possible sources of funds to offset these losses. One of these is higher tuition. Medical school tuitions have increased sharply since 1960 (see Table 9). However, tuitions are generally lower in the South than elsewhere in the nation (33 percent lower in public schools, and 20 percent lower in private schools).

Dr. Galambos points out that despite the increases in tuition, the rate of return for medical education compared to the prospective income of a physician is far better than that of any alternative career field. Thus, to the extent that medical students are motivated by economics and have access

TABLE 8

State Support of Medical Schools
1978-79

	State Support to Medical Schools*--General Operations 1978-79	State Support		
		Per Resident	Per 10,000 Personal Income	As Percent of Higher Education 1977-78
	(thousands)			
Alabama	$ 42,913	$11.46	$16.32	7.40%
Arkansas	8,507	3.92	5.75	4.70
Florida	31,872	3.64	4.21	6.02
Georgia	19,263	3.81	5.01	3.92**
Kentucky	16,918	4.85	6.53	3.95
Louisiana	25,300	6.35	8.42	7.31
Maryland	14,874	3.62	3.92	3.93
Mississippi	13,339	5.54	8.91	5.53
North Carolina	32,406	5.88	7.85	5.27
South Carolina	25,200	8.79	12.23	4.58
Tennessee	23,265	5.34	7.28	3.17
Texas	140,983	10.65	12.18	10.96
Virginia	32,615	6.47	7.29	5.30
West Virginia	17,684	9.42	12.60	12.94
Region	445,139	6.68	8.36	-
United States	1,080,059	4.94	5.64	4.83

*To public and private colleges.
**Excludes Morehouse in 1977-78

SOURCES: Column 1--Association of American Medical Colleges.
Column 2--Bureau of Census, Current Population Reports, Series P-25, No. 876.
Column 3--U.S. Department of Commerce, Bureau of Economic Analysis, BEA 80-26, May 11, 1980.
Column 4--Journal of Medical Education, Vol. 54, December 1979, p. 965.

TABLE 9

Medical School Tuition and Fees, United States
1960-61 - 1978-79

	Private Schools	Public Schools, In-State Residents
1960	$1,050	$ 498
1965-66	1,440	600
1970-71	2,000	683
1975-76	3,075	960
1977-78	4,150	1,200
1978-79	5,994*	1,473*

*Average private tuition for 1978-79 as calculated from Appendix 11, "Medical Education in the U.S., 1978-1979," Journal of the American Medical Association, March 7, 1980, is $6,549, and public tuition for in-state residents is $1,750. Excluding California public institutions with no tuitions, the average is $1,875 for public, in-state.

Source: Association of American Medical Colleges, Medical Education: Institutions, Characteristics, and Programs, Washington, D.C., 1979, p. 14.

to funds (either their families or through loans or scholarships), higher tuitions would not seem to constitute a deterrent to medical students. The issues then become: (1) Are loans and financial aid sufficiently available for students who do not have financial resources? and (2) If such funds are available, are the burdens of repaying so onerous that they discourage potential qualified applicants or encourage them to choose high paying specialties where they are not needed in order to repay their loans? There have been great increases in loans and scholarships--from $15 million in 1963 to $263 million in 1978. Most of the increases in loan and scholarship funds are service-related, that is they require the physician to practice in an underserved area or pay a stiff financial penalty.

Presently three-fourths of medical students graduate in debt, to the average amount of $13,800, but only about one-third of this amount has been incurred in medical school; the remainder is from undergraduate years.

Some persons fear that high tuition policy will push all but the wealthiest medical students either into indentured service or into the most lucrative specialties in order to repay their debts. While there appears to be no answer to that fear, states will need to assess the adequacy of their commitments to scholarships and loans for disadvantaged students.

Medical practice plans can be another possible source for making up the lost federal revenues to the medical schools. Medical practice plans govern the funds generated by the fees of the clinical faculty for the physicians' services they render in the course of their teaching and research. These plans

have become an increasingly important part of the funding for medical education, especially to support technicians and laboratory assistants. In 1978, medical practice plans generated $616 million, or 14.3 percent of medical school revenues. While the clinical practices which generate this income do complement the clinical teaching of medical students, emphasis on the financial aspects of these practices could lead to sacrifices in the quality of the instruction. At one time, medical schools depended almost entirely on the volunteer services of physicians for their clinical instruction, but reforms made after the landmark Flexner Report of 1910 focused on the employment of full-time clinical faculty at the prevailing income rate of private practitioners. Overall, it appears that there are serious limitations to the possibilities of asking the medical practice plans to contribute a larger proportion to the revenues of the medical schools--since some schools are not geographically situated to yield greater revenues and since there is a point beyond which the quality of clinical instruction will be reduced.

Another alternative to the loss of federal funds would be to reduce the size of the classes in existing schools, or perhaps to close some schools. In view of the impending surplus of physicians in the South, this is an attractive option for reasons other than economics. However, such cuts in enrollments would have to be accompanied by cuts in faculty and other operating costs and this is difficult to do. Accreditation standards and basic concerns for quality of the instructional process demand certain minimum numbers of faculty and resources. Major cuts in faculty would probably also require substantial revisions in curriculum, a difficult undertaking in any

institution of higher education, especially for a program that is constrained by professional accreditation standards such as those of the Liaison Committee on Medical Education. One implication of this is that the states should seriously consider putting a lid on any currently planned increases in medical school enrollments. In this vein, Alabama has already decided to limit enrollments to those of 1980, rather than allowing further expansions that had been scheduled. This will not make up for the loss of federal funds, but it will prevent the deficit from becoming much larger.

From the point of view of the state legislator or the higher education agency, the problem of the loss of the federal funds is only a small part of the overall concern for medical education. Of far greater concern to the states is the total cost and complexity of the expenditures for medical education. The states are especially concerned about the escalating costs of new medical schools. For example, in one Southern state, a new medical school which was estimated to cost the state $1 million per year at the time the decision was made to begin the new school in 1973, actually cost the state $10 million by 1977, and now is estimated to cost $15.7 million by 1985. By the mid-Eighties the new school will require the same number of state dollars for teaching 290 students that an established medical school in the same state will require to train 700 to 800 students. In addition, medical education cost increases are far out-distancing those of the other parts of higher education. For example, Texas increases in appropriations to the seven academic health science centers equaled the appropriations to all of the 33 other universities and colleges in the University of Texas system. The

policymakers feel that there must be a way to estimate what medical education should cost for purposes of state support, in contrast to the present practice of supplying what the medical schools say it costs.

SUMMARY

The states and the medical schools of the South are facing a significantly changed circumstance from that experienced just a few years ago when the region faced a shortage of physicians. As a result of the near doubling of enrollments in the medical schools of the South and the reversal of the traditional out-migration of young physicians, the region is faced with the certainty of a surplus of physicians by 1990 and beyond. The surplus will be especially severe in the surgical specialties and in the hospital-based specialties of pathology and radiology. Projections show that despite the overall surplus of physicians, problems will still remain in the distribution of physicians to rural areas, to inner city areas, to the primary care specialties, and to work in public agencies. Shortages of black physicians in proportion to the part of the population that is black will also continue.

The medical schools are also faced with the loss of federal capitation funds and some Veterans Administration funding. In total, these losses make up about 6.0 percent of what the states are now spending to support medical education. Several alternatives are available to manage the loss of federal funds--increased state appropriations, decreased enrollments, increased tuition, tighter management, and increased contributions from medical practice plans. At this time, the states are concerned about the increases in the costs of medical education, which have outstripped the increases in all the rest of

postsecondary education, and efforts are underway to develop a better understanding of these costs.

The states and the medical schools must work together to develop strategies for dealing with the increasing costs and the problems of distribution of physicians to areas of need. Collaborative actions with coordinated planning can make a significant improvement in the distribution of physicians, but specific actions are necessary. The pending surplus of physicians will not produce better distribution, but, rather, the result will be over-utilization of physicians in the urban areas and some dropout of physicians from the profession.

With the withdrawal of federal funding and concern for overall supply of physicians, the major public source of funding for medical education will be the states. It is essential that the state policymakers and the leaders in medical education understand the current issues and needs. Each state must make its own decisions about how to solve the problems, but all states are facing much the same set of issues resulting from a surplus of physicians in the secondary care specialties in the near future.